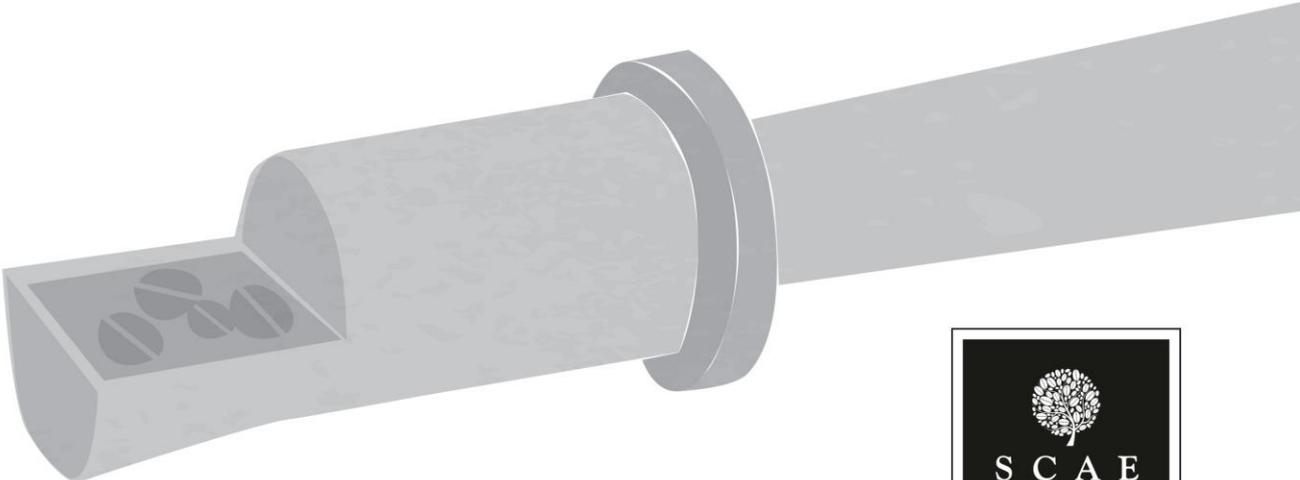


ROASTING

Roasting





SCAE COFFEE DIPLOMA: ROASTING

OVERVIEW: Designed to introduce the novice into the core skills and equipment required to produce great roasted coffee. Ideal for someone who is considering a vocation as a coffee roaster. Courses detailing the information required to attempt the qualification are expected to last 1/2 - 1 day. The pass mark is 60%.

Roasting Foundation

Sensory Foundation Level is a pre-requisite for the Roasting Foundation course.

It is recommended that the Green Coffee Foundation Level is completed before taking the course.

Blooms Taxonomy for Foundation Level

Level 1: Knowledge – Remembering information				
Recognize	Memorize	List	Name	Relate
Define	Identify	Distinguish	Repeat	Recall
Level 2: Comprehension – Explaining concepts				
Restate	Describe	Explain		
Discuss	Identify	Express	Translate	Recognize
Locate	Report	Extrapolate	Convert	Review
Interpret	Abstract	Transform		

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SUB CODE	KNOWLEDGE/SKILL REQUIRED	STANDARDS	REFERENCE
1.0 HEAT TRANSFER			
1.01.01	<p>The overall roasting process needs heat to progress and this is transferred from the heating element in the roaster to the beans during the roasting process</p> <p>Heat always goes from a hot substance to a cold substance</p>	L2	
1.01.02	<p>Explain that heat goes from hot to cold substances</p> <p>Recognise that heat eventually leads to fires in roasters</p>	L2	
1.02.01	<p>FIRE</p> <p>Since coffee is an organic substance, inappropriate amounts of heat can lead to fire in the drum, but also fire in the chaff collector and the chimney because of organic matter build-up</p> <p>Although there is a principally big difference between the coffee roasting process and a fire, the beans are not far from catching fire in the end of a roast. In case of any irregularity in the end of a roast there is a great risk of fire. Because of this the roast master should always have a specific strategy to handle as part of their production routines</p>		<p>Wiki: Fire_triangle</p> <p>Wiki: Fire_extinguisher</p>
2.0 BASIC ROASTING AND THE ROASTING CYCLE			
2.01.01	<p>Very different phases are present in the overall process of converting green coffee into well roasted coffee beans cooled to room temperature</p> <p>Time and temperature evolution are main parameters for quality</p> <p>In specialty coffee a 'flash roast' is defined as one under 5 minutes. A slow roast is defined as one between 10 and 20 minutes</p>	L1	<p>(Illy & Viani 2005; Huschke 2007) p. 18-22</p> <p>(Toci et al. 2009; Illy & Viani 2005) p. 179ff</p> <p>Pdf on calculating percentage of change</p> <p>Pdf with SCAE roast log</p>
2.01.02	<p>Has held green and roasted coffee in their hands and able to discuss the main differences</p> <p>Distinguish between the different basic stages of coffee in a roast cycle visually</p> <p>Can control the heat element in a roaster</p> <p>Can repeat a roast profile by repeating the heat element control plan for a roast</p> <p>Can fill out a roast log correctly, recording points in a roast specifically identified in an exam</p>	L1	<p>(Illy & Viani 2005; Huschke 2007) p. 18-22</p> <p>(Toci et al. 2009; Illy & Viani 2005) p. 179ff</p> <p>Pdf on calculating percentage of change</p> <p>Pdf with SCAE roast log</p>

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SUB CODE	KNOWLEDGE/SKILL REQUIRED	STANDARDS	REFERENCE
2.02.01	<p>DRYING</p> <p>Coffee is wet for conservational reasons: between 8 – 12.5% for specialty coffee. Because most of this will leave during the roasting process this is the main contributor to roast loss from green to roasted coffee</p> <p>Applied heat is the driver of the drying process and this phase needs energy input all the time to progress</p> <p>The drying process prepares the coffee for the later actual roasting process, makes up approximately 60% of the overall process</p> <p>So, in a 15 minute roast the heating-drying phase will last around 10 minutes. 1st crack indicates the end of this stage of the process</p>	L2	(Clarke & Vitzthum 2001; Huschke 2007) p. 20ff
2.02.02	Can operate a total moisture meter to measure total moisture level of green coffee	L2	(Clarke & Vitzthum 2001; Huschke 2007) p 20ff
2.03.01	<p>ROASTING</p> <p>When 1st crack is rolling the actual roasting process is starting</p> <p>At this point in the roast most of the moisture has left and several different chemical processes have started</p> <p>In general, these processes lead to a brown colour of the beans, but these chemical processes will start to <i>produce</i> heat, so in the roasting phase now there is two sources of heat:</p> <p>(1) The heat source of the roaster, and (2) inside each bean</p>		(Illy & Viani 2005; Huschke 2007) p. 18-22
2.03.02	<p>Ability to record 1st crack correctly (not first individual bean cracking but the overall batch)</p> <p>Plan and execute a flame reduction at or around 1st crack</p>		(Illy & Viani 2005; Huschke 2007) p. 18-22
2.04.01	<p>COOLING</p> <p>When roast colour is achieved cooling quickly is required to stop the roasting/colour development.</p> <p>Five minutes for the beans to be below 30°C in the cooling tray is the rule of thumb for the cooling process</p>		(Illy & Viani 2005; Huschke 2007) p. 21
2.04.02	<p>Measure temperature of beans in cooling tray with an infrared thermometer</p> <p>Feel with their hands if the beans are close to 30°C</p> <p>Measure moisture level in roasted coffee</p>		(Illy & Viani 2005; Huschke 2007) p. 21



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SUB CODE	KNOWLEDGE/SKILL REQUIRED	STANDARDS	REFERENCE
3.0 LIGHT, MEDIUM AND DARK ROASTING			
3.01.01	All coffee has acidity and bitterness. For any given coffee the lighter the roast the more acidic and less bitter and vice versa (the darker the roast the more bitter and less acidic) As such, the 'roast degree' is an integral part of a given 'product' sensory specification	L1	(Clarke & Vitzthum 2001; Huschke 2007) p. 20, 26
3.01.02	Sensorially identify acidity and bitterness in coffee	L1	(Clarke & Vitzthum 2001; Huschke 2007) p. 20, 26

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Key Terminology

Word or Term	Proposed Description	Source
1 st and 2 nd crack		
8-12% moisture in green beans		
Air (drum environment) temperature probe		
Airflow, chimney		
Bean temperature probe		
Chaff. Chaff collector		
Charge/Drop temperature		
Cooling phase / Cooling time		
Cooling tray		
Dark roast high bitterness low in acidity. Opposite relationship for light roasts		
Dropping temperature		
Drum rotation		
Drying phase		
End temperature		
Fire extinguisher (water vs CO2)		
Fire in the chimney		
Fire in the drum		
Light roast vs Dark roast		
Moist vs Dry period		
Total moisture meter		
Percentage change		
Quenching		



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Word or Term	Proposed Description	Source
Reducing points		
Roast degree / roast colour		
Roast loss		
Roast loss, Volume increase, density drop		
Roast profile (time x temp)		
Roasting curve		
Roasting cycle		
Roasting drum		
Roasting process		
Sample spoon / tryer		
Silver skin		
Slow roast vs Flash roast		
Stirring device		
Sweet spot		
Turning point (minimum profile temperature)		
Ventilation		